IN THE SPECIFICATION

At page 3, line 7, please replace the paragraph with the following:

--The above-discussed and other problems and deficiencies of the prior art are overcome or alleviated by the several methods and apparatus of the present invention for a system and method for converting an analog voltage signal to a digital representation at high speeds, known as an analog to digital converter (A/D converter). The invention teaches an N-bit A/D converter, made by N superconducting, preferably HTC, transmission lines. The N lines are arranged adjacently and in parallel with each other. On each line 2^{N-1} JJs are ~~imbedded~~ embedded in series. The JJs form a matrix over the configuration of the N superconducting transmission lines in such a manner that across the lines the JJs give N digit binary numbers, while in the length direction these N digit binary numbers fall in numerical order. A scanning electron beam is made to impinge on this arrangement. The beam is scanned across the lines at a high frequency, while it is deflected by the applied voltage signal along the direction of the lines. The beam generates a voltage step on any one of the N lines on condition of hitting any one of the JJs. In this manner upon each cross-scanning of the beam, an N-bit step voltage pattern is generated on the lines. This pattern is the direct digital readout of the input voltage signal.--

At page 7, line 8, please replace the paragraph with the following:

-- In Fig. 4, a general A/D converter 40 for N bits is illustrated. Here, of course, N transmission lines 42a, 42b, 42c…42_{N-1} are needed. The rows repeat at a period p, the length of the JJ's, which is also the length of a unit of void, the shortest portion of the line without a JJ. The total length of each transmission line is $L = p2^N$. This relationship clearly shows that if L is maintained constant, as the value of p decreases, the number of bits increases, thus allowing for a wider ~~the~~ analog bandwidth. The analog bandwidth is limited by the propagation delay T of the signal in the transmission line 42, which is related to the length of the line. The bandwidth of the A/D converter 40 may be expressed by: $BW = 1/2T$. –